

REMARKS/ARGUMENTS

By this paper, Applicant responds to the Office Action of January 12, 2005 and respectfully requests reconsideration of the application. A Petition for Extension of Time extends time through June 12, 2005. Accordingly, this response is timely.

Claims 1, 3-6, 8, 9, 11-54 are now pending, a total of 51 claims. Claims 1, 5, 11, 20, 23, 30, 35 41, 44 and 49 are independent. Claims 1, 3, 4, 8, 9, and 14-53 are allowed or are indicated to recite allowable subject matter. Of the claims not allowed, claims 5 and 11 are independent.

I. Preliminary Amendment and Information Disclosure Statement

Applicant requests confirmation that a Preliminary Amendment filed on March 30, 2001 (making eight amendments to the specification) was received and entered.

An Information Disclosure Statement was filed with Applicant's paper of September 21, 2004. A checked-off copy of the accompanying Form 1449 was not received. The same references, with a few more that have come to light in the intervening period, are presented on the IDS and Form 1449 that accompanies this Response.

II. Claim 5

Claim 5 is compared to certain portions of Colwell '728 and Papworth '473 in paragraphs 2-5 of the Office Action. Claim 5 recites as follows:

5. A method comprising the steps of:
 - decoding a macroinstruction of a computer, the decoding of the macroinstruction generating a plurality of iterations of:
 - a pattern of microinstructions implementing a basic operation, wherein the microinstruction set is architecturally exposed to programs fetched from an architecturally-visible memory of the computer, and
 - a branch instruction predicted not taken..

Claim 5 recites a "microinstruction set" that is "architecturally exposed" in "an architecturally-visible memory." The Office Action compares this claim language to Colwell '728, col. 12, lines 19-23. But these sections of Colwell '728 only discuss conventional microcode that is

programmed only by a microcode programmer, then fabricated into the chip. Colwell neither teaches nor suggests his microcode be “architecturally exposed,” let alone in an “architecturally-visible memory.”

The Office Action does not compare this part of claim 5 to any portion of Papworth '473.

Because the Office Action does not indicate any teaching or suggestion of this claim limitation, any obviousness concern is resolved, and the claim may be allowed.

The amendments to claim 5 merely make more apparent limitations that were inherently present before amendment. For example, reciting that the macroinstruction is decoded into a “plurality” of iterations was inherent, because there would be no “branch instruction” in the decoding of an instruction that generated only a single iteration. “Architectural exposure” of an instruction set requires an “architecturally-visible memory.” Thus, the amendment to claim 5 is not narrowing.

III. Claim 11

Claim 11 is compared to certain portions of Colwell '728 and Papworth '473 in paragraphs 2-4 and 7 of the Office Action. Claim 11 recites as follows:

11. A computer, comprising:

an instruction decoder designed to decode macroinstructions into microinstructions for execution in an instruction pipeline on a computer, and for at least one macroinstruction, the decoding of the macroinstruction generating a plurality of iterations of:

a pattern of microinstructions implementing a basic operation, and
a branch microinstruction predicted not taken;

the instruction decoder being further designed to cease generating iterations on detection of a branch mispredict.

The Office Action compares the “branch mispredict” of claim 11 to col. 9, lines 3-15 of Papworth '473. However, col. 6, line 68 to col. 7, line 8 teaches that Papworth removes the inter-iteration conditional branch entirely, which “eliminates the need for branch predictions.” Instead of using the simple branch mispredict of claim 11, and having no branch instruction available, Papworth must instead rely on specialized control logic to keep track of which unrolled iterations are actually to be executed and which are to be “executed as null

instructions.” Col. 9, line 12. Claim 11 allows the reuse of a conventional pipeline flush on mispredict, and thereby simplifies the circuitry.

These differences render claim 11 patentable over the art.

Claim 11 is merely rewritten into independent form. The amendment is not narrowing.

IV. Dependent claims

Dependent claims 5-7, 10-13 and 54 are patentable with the independent claims discussed above. In addition, the dependent claims recite additional features that further distinguish the art.

In view of the amendments and remarks, Applicant respectfully submits that the claims are in condition for allowance. Applicant requests that the application be passed to issue in due course. The Examiner is urged to telephone Applicant's undersigned counsel at the number noted below if it will advance the prosecution of this application, or with any suggestion to resolve any condition that would impede allowance. In the event that further extension of time is required, Applicant petitions for that extension of time required to make this response timely. Kindly charge any additional fee, or credit any surplus, to Deposit Account No. 23-2405, Order No. 114596-31-0127BS.

Respectfully submitted,

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